

CLAIMS

What is claimed is:

1. A laser diode arrangement (10) for generating single mode tunable laser radiation (15) comprising a broad area laser diode (11) having a rear facet (16) and a front facet (17) and forming a first resonator (R1), an external, second resonator (R2) coupled to said first resonator (R1), an optical transmission component (30) and at least one wavelength selective optical reflection element (40, 50) for coupling laser light (13) emitted from the broad area laser diode (11) back into the first resonator (R1), said optical transmission component (30) being a rotational symmetrical collimator lens which is so arranged and oriented that the laser light (13) emitted from the broad area laser diode (11) is collimated in a spatial direction (S) normal to the epitaxial plane E of the laser diode.

2. An arrangement according to claim 1, wherein said optical transmission component (30) is an aspheric lens.

3. An arrangement according to claim 1, wherein said wavelength selective reflection element (40, 50) is arranged in the area of the Raleigh length of the focus of the optical transmission component (30).

4. An arrangement according to claim 1, wherein the laser radiation (15) is uncoupled by way of the rear facet (16) of the broad area laser diode (11), the ratio of the reflectivity of the rear facet (16) and the reflectivity of the optical reflection element (40) being smaller than 1.

5. An arrangement according to claim 4, wherein the ratio of the reflectivity of the rear facet (16) and the reflectivity of the optical reflection element 40 is smaller than 0.1.

6. An arrangement according to claim 4, wherein the reflectivity of the rear facet (16) is at most 1% and the reflectivity of the optical reflection element (40) is at least 95%.

7. An arrangement according to claim 4, wherein, in the area of the rear facet (16), the broad area laser diode (11) includes an additional optical transmission component (70).

8. An arrangement according to claim 7, wherein said additional optical transmission component (70) comprises a collimator lens (72).

9. An arrangement according to claim 7, wherein the additional optical transmission component (70) includes a cylinder lens (74).

10. An arrangement according to claim 1, wherein the front facet (17) of the broad area laser diode (11) facing the external resonator (R2) is provided with an antireflection coating.

11. An arrangement according to claim 10, wherein the reflectivity of the antireflection-coated front facet (17) is less than 0.1%.

12. An arrangement according to claim 1, wherein the wavelength selective reflection element (40) is an optical infraction grid (40).

13. An arrangement according to claim 1, wherein the wavelength selective reflection element (50) is a mirror.

14. An arrangement according to claim 1, wherein the broad area laser diode (11) and the external resonator (R2) form one of a Littman and a Littrow arrangement.

15. An arrangement according to claim 1, wherein said broad area laser diode (11) has an active zone (Z) has, parallel to the epitaxial plane E, a rectangular shape.

16. An arrangement according to claim 15, wherein the cross-sectional area of the active zone (Z) normal to the epitaxial plane (E) has a width of between 5  $\mu\text{m}$  and 600  $\mu\text{m}$ .

17. An arrangement according to claim 1, wherein the broad area laser diode (11) has an active zone (Z) which, parallel to the epitaxial plane (E) has a trapezoidal shape.

18. An arrangement according to claim 17, wherein the cross-sectional area of the active zone (Z) has, at the front facet (17) normal to the epitaxial plane E, a width between 5  $\mu\text{m}$  and 300  $\mu\text{m}$ .

19. An arrangement according to claim 1, wherein the broad area laser diode (11) is formed by a laser diode array.